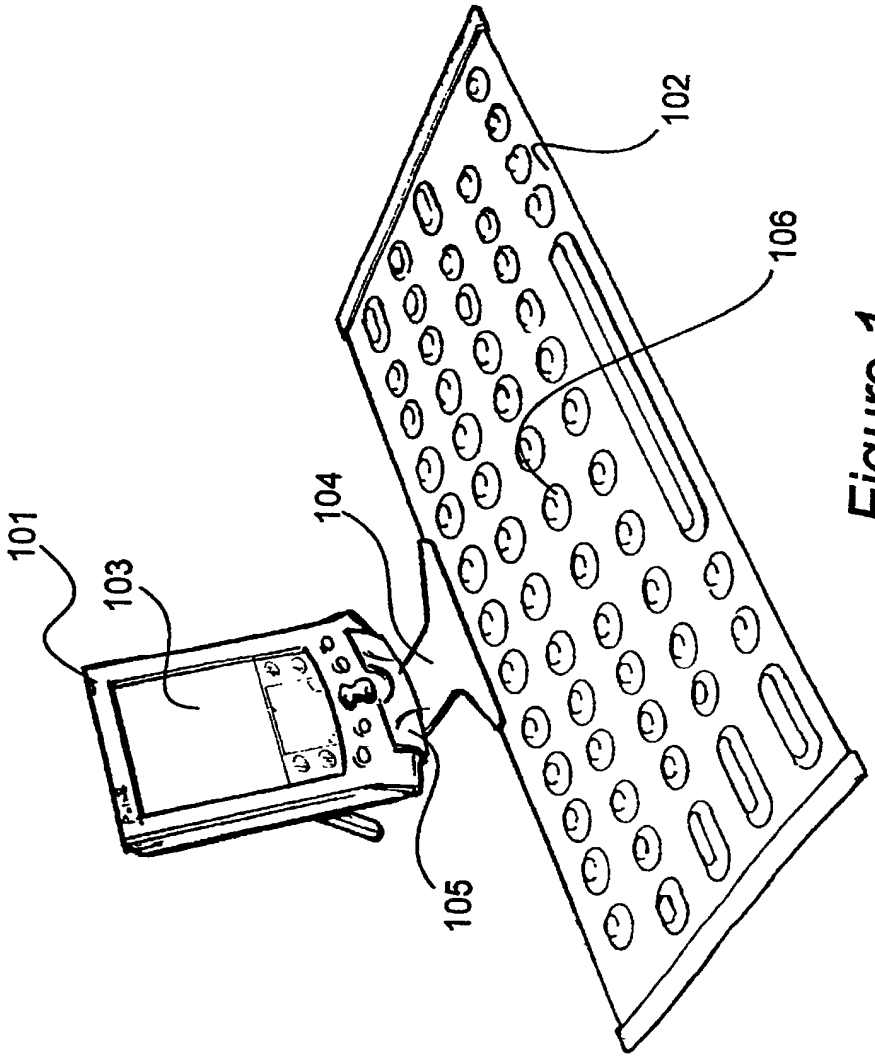

Figure 1

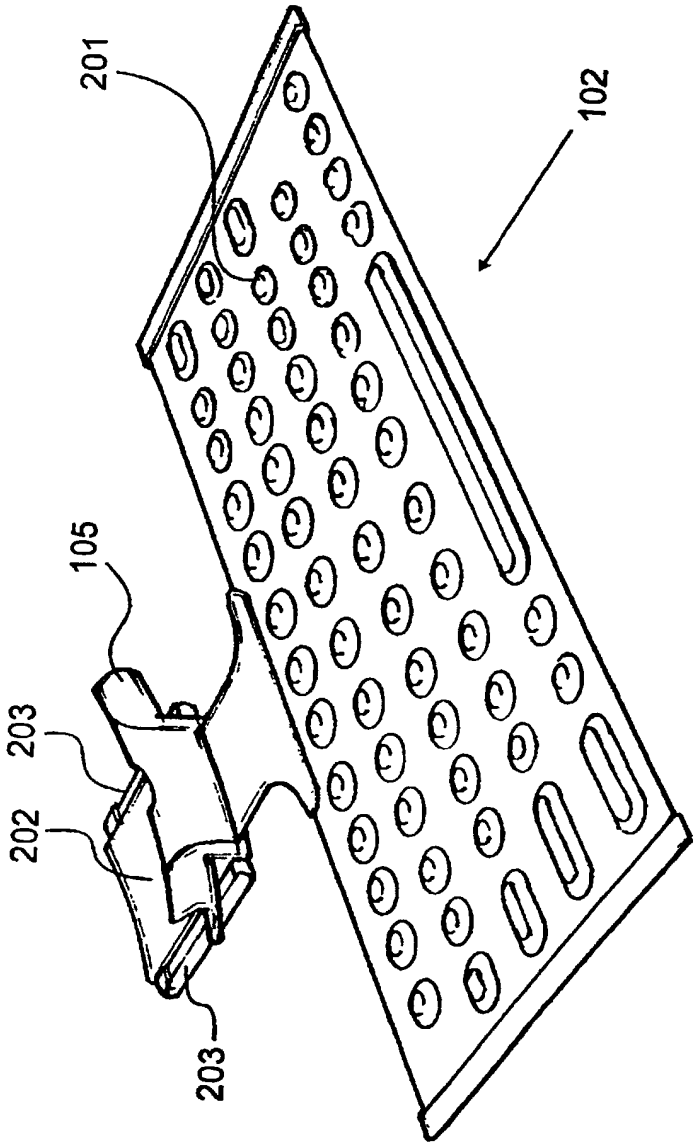

Figure 2

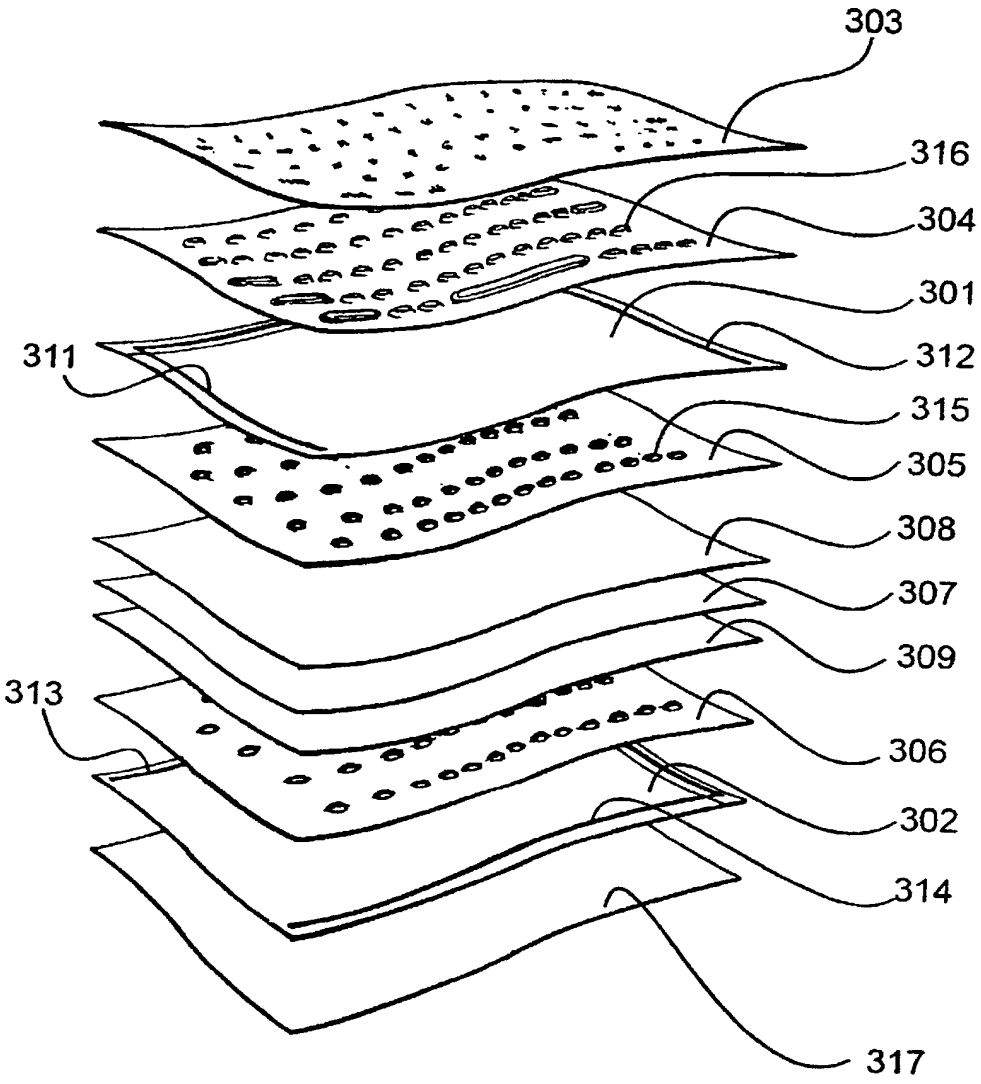

Figure 3

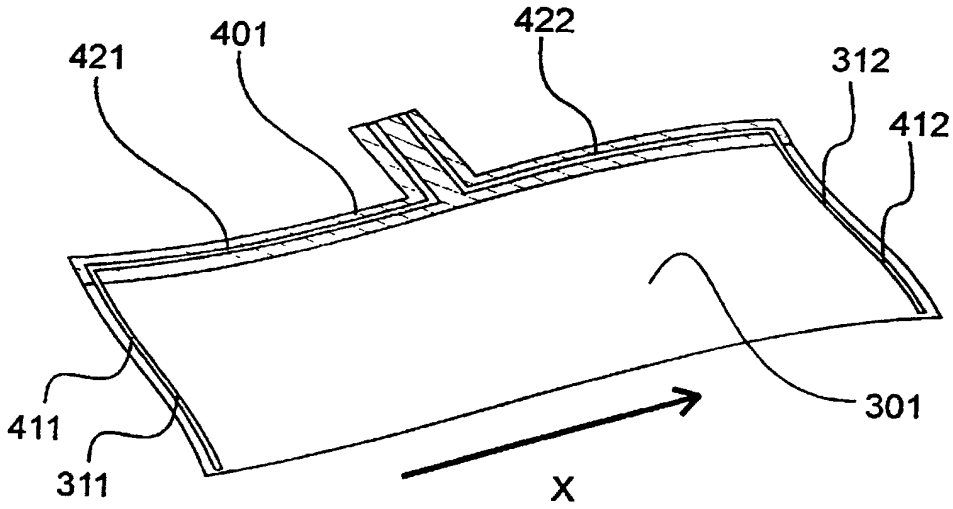

Figure 4A

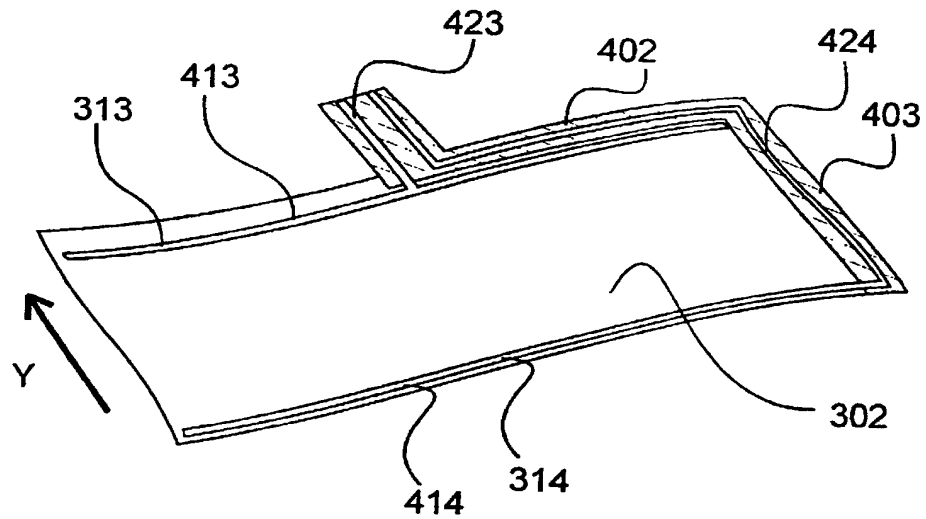

Figure 4B

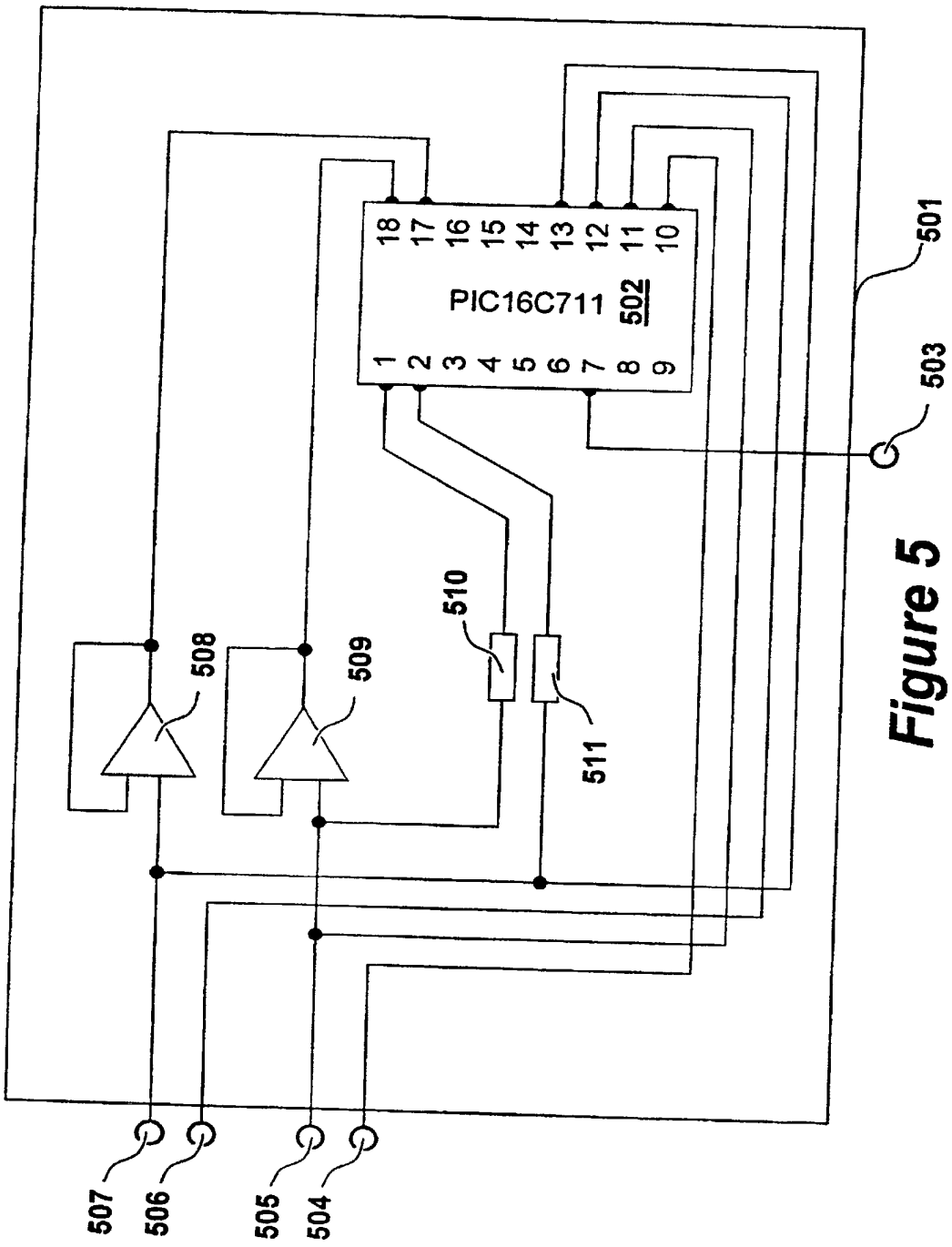
PIC16C711 502
18 17 16 15 14 13 12 11 10
1 2 3 4 5 6 7 8 9
501
503
508
509
510
511
507
506
505
504

Figure 5

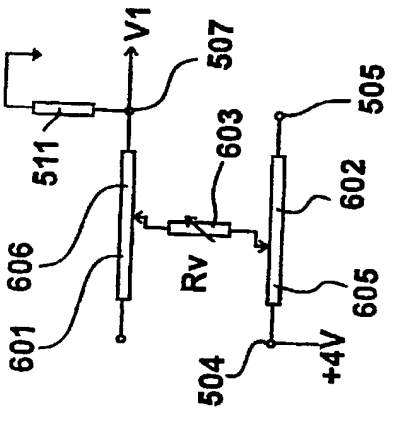

Figure 6A

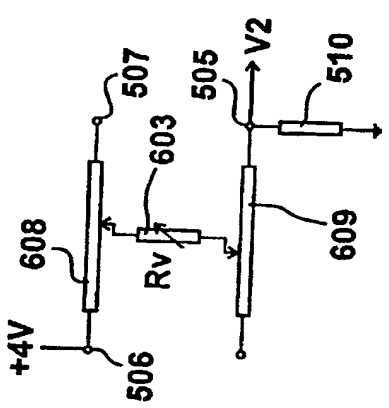

Figure 6B

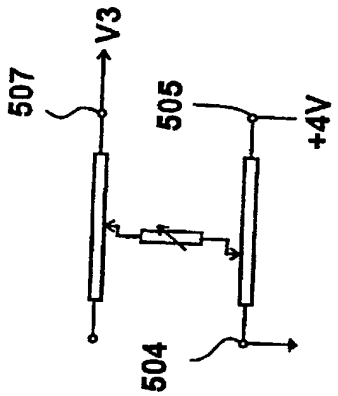

Figure 6C

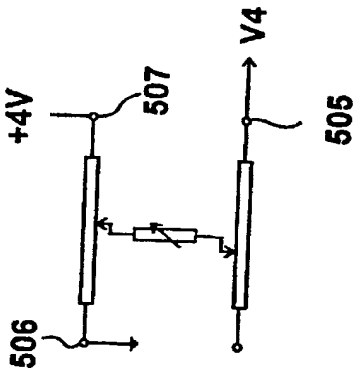

Figure 6D

$$\frac{1}{Rv} \sim \propto \text{AREA.FORCE} \qquad 611$$

$$Rv \propto \frac{1}{V_1} + \frac{1}{V_2} \qquad 610$$

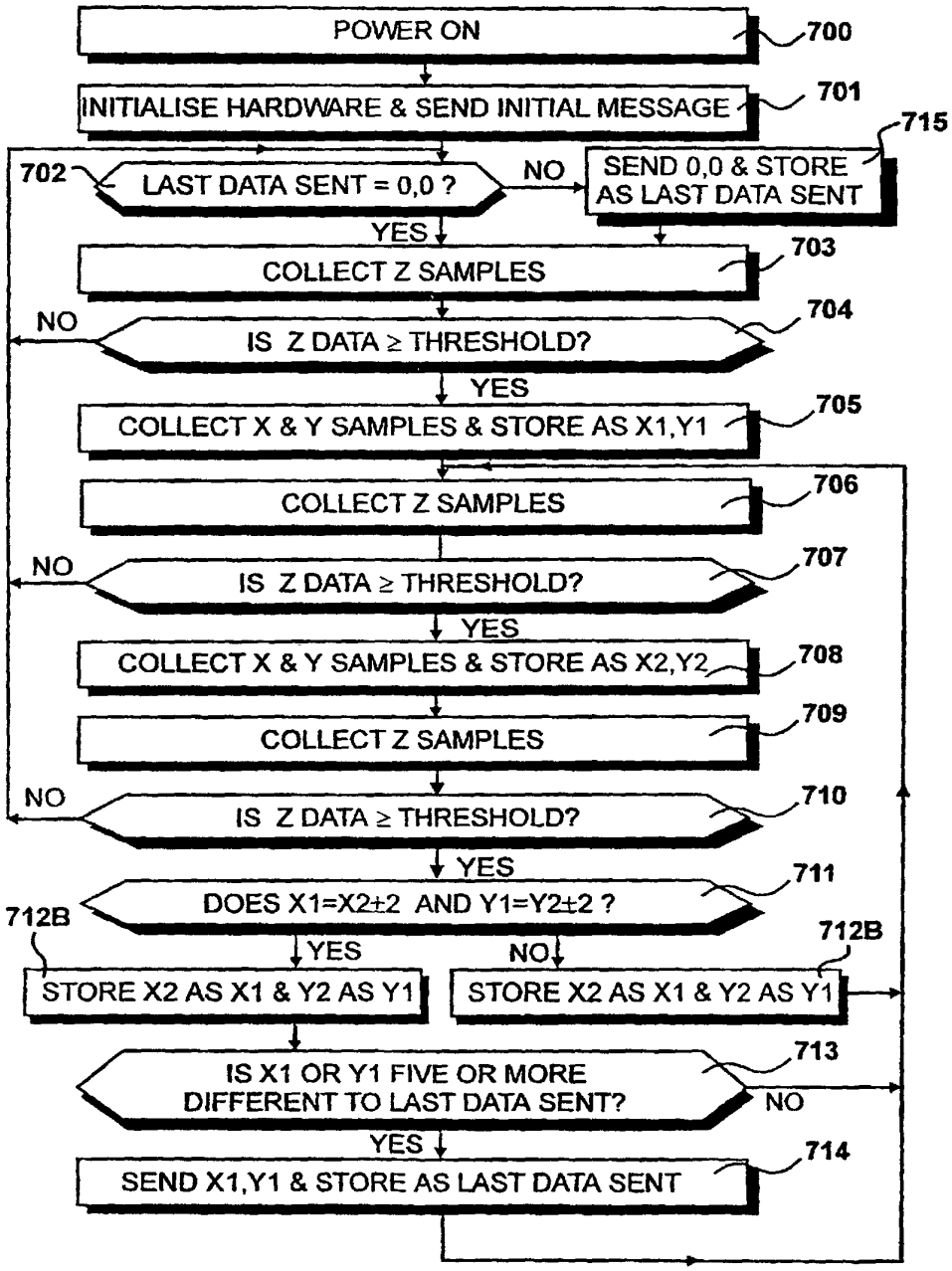
POWER ON
700
INITIALISE HARDWARE & SEND INITIAL MESSAGE
701
715
702
LAST DATA SENT = 0,0 ?
NO
SEND 0,0 & STORE AS LAST DATA SENT
YES
COLLECT Z SAMPLES
703
NO
IS Z DATA ≥ THRESHOLD?
704
YES
COLLECT X & Y SAMPLES & STORE AS X1,Y1
705
COLLECT Z SAMPLES
706
NO
IS Z DATA ≥ THRESHOLD?
707
YES
COLLECT X & Y SAMPLES & STORE AS X2,Y2
708
COLLECT Z SAMPLES
709
NO
IS Z DATA ≥ THRESHOLD?
710
YES
DOES X1=X2±2 AND Y1=Y2±2 ?
711
712B
YES
NO
712B
STORE X2 AS X1 & Y2 AS Y1
STORE X2 AS X1 & Y2 AS Y1
IS X1 OR Y1 FIVE OR MORE DIFFERENT TO LAST DATA SENT?
713
NO
YES
SEND X1,Y1 & STORE AS LAST DATA SENT
714

Figure 7

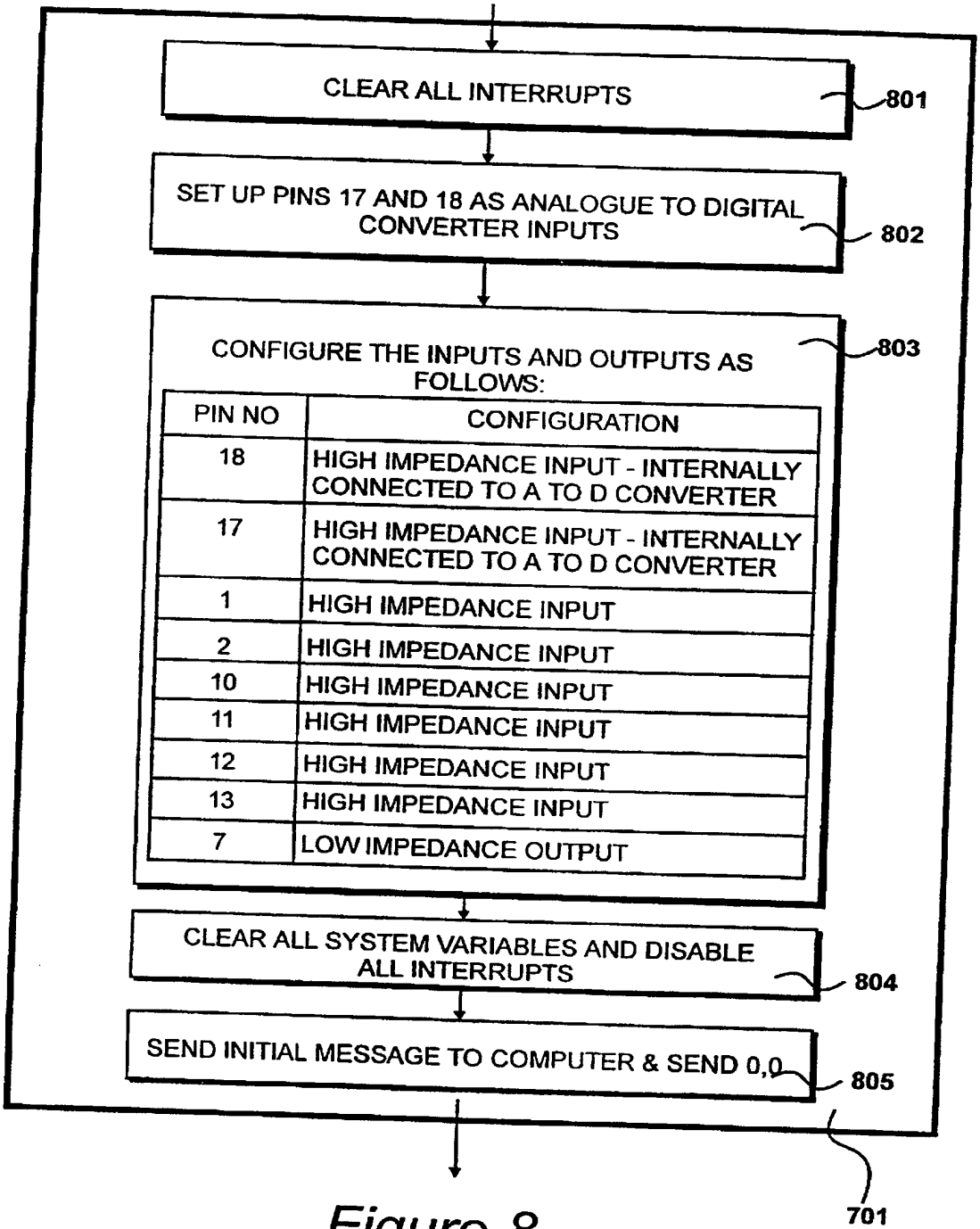
CLEAR ALL INTERRUPTS
801
SET UP PINS 17 AND 18 AS ANALOGUE TO DIGITAL CONVERTER INPUTS
802
CONFIGURE THE INPUTS AND OUTPUTS AS FOLLOWS:
803
PIN NO
CONFIGURATION
18
HIGH IMPEDANCE INPUT - INTERNALLY CONNECTED TO A TO D CONVERTER
17
HIGH IMPEDANCE INPUT - INTERNALLY CONNECTED TO A TO D CONVERTER
1
HIGH IMPEDANCE INPUT
2
HIGH IMPEDANCE INPUT
10
HIGH IMPEDANCE INPUT
11
HIGH IMPEDANCE INPUT
12
HIGH IMPEDANCE INPUT
13
HIGH IMPEDANCE INPUT
7
LOW IMPEDANCE OUTPUT
CLEAR ALL SYSTEM VARIABLES AND DISABLE ALL INTERRUPTS
804
SEND INITIAL MESSAGE TO COMPUTER & SEND 0,0
805
701

Figure 8

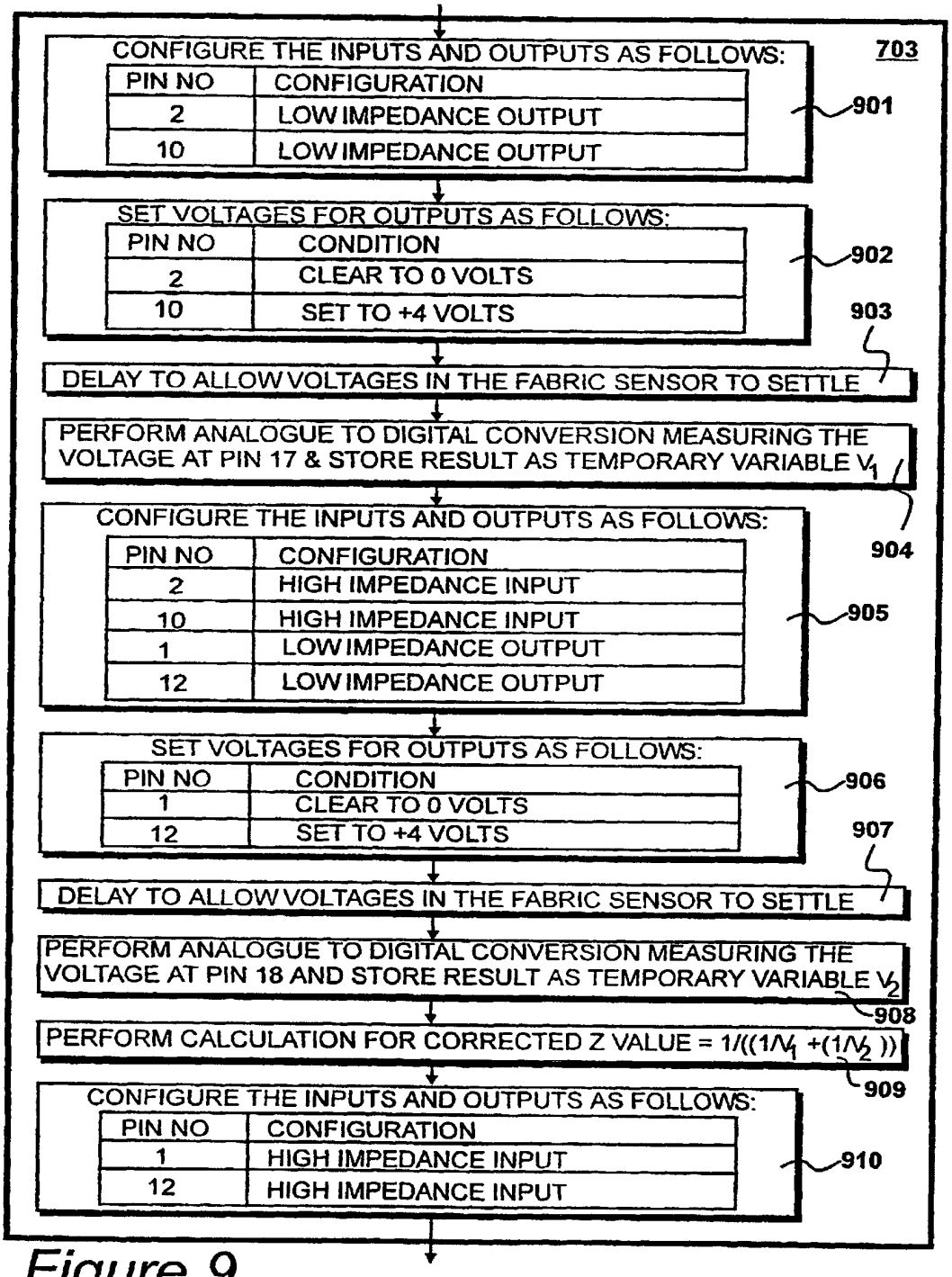
CONFIGURE THE INPUTS AND OUTPUTS AS FOLLOWS:
703
PIN NO | CONFIGURATION
2 | LOW IMPEDANCE OUTPUT
10 | LOW IMPEDANCE OUTPUT
901
SET VOLTAGES FOR OUTPUTS AS FOLLOWS:
PIN NO | CONDITION
2 | CLEAR TO 0 VOLTS
10 | SET TO +4 VOLTS
902
903
DELAY TO ALLOW VOLTAGES IN THE FABRIC SENSOR TO SETTLE
PERFORM ANALOGUE TO DIGITAL CONVERSION MEASURING THE VOLTAGE AT PIN 17 & STORE RESULT AS TEMPORARY VARIABLE V1
904
CONFIGURE THE INPUTS AND OUTPUTS AS FOLLOWS:
PIN NO | CONFIGURATION
2 | HIGH IMPEDANCE INPUT
10 | HIGH IMPEDANCE INPUT
1 | LOW IMPEDANCE OUTPUT
12 | LOW IMPEDANCE OUTPUT
905
SET VOLTAGES FOR OUTPUTS AS FOLLOWS:
PIN NO | CONDITION
1 | CLEAR TO 0 VOLTS
12 | SET TO +4 VOLTS
906
907
DELAY TO ALLOW VOLTAGES IN THE FABRIC SENSOR TO SETTLE
PERFORM ANALOGUE TO DIGITAL CONVERSION MEASURING THE VOLTAGE AT PIN 18 AND STORE RESULT AS TEMPORARY VARIABLE V2
908
PERFORM CALCULATION FOR CORRECTED Z VALUE = 1/((1/V1 +(1/V2))
909
CONFIGURE THE INPUTS AND OUTPUTS AS FOLLOWS:
PIN NO | CONFIGURATION
1 | HIGH IMPEDANCE INPUT
12 | HIGH IMPEDANCE INPUT
910

Figure 9

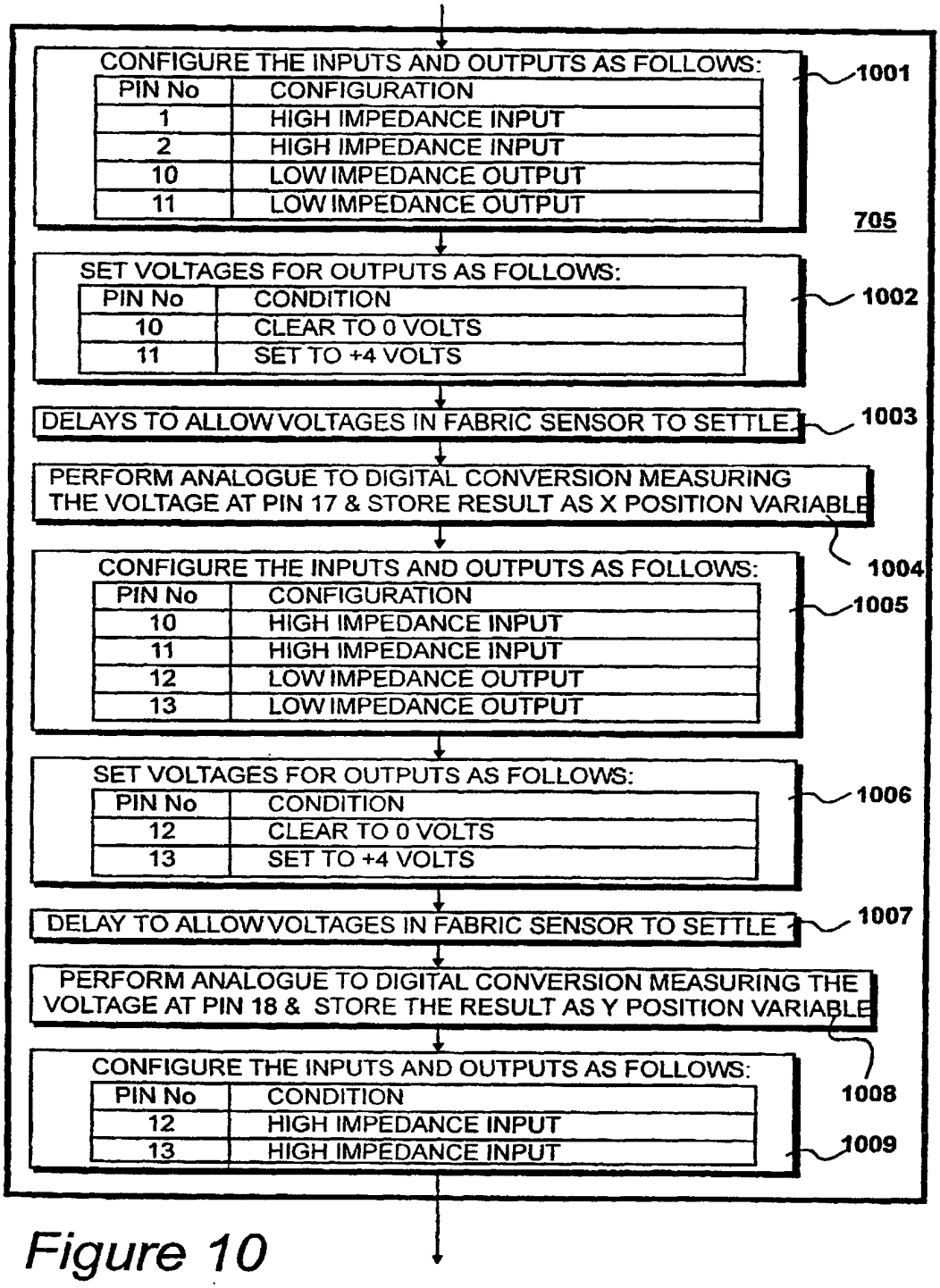
CONFIGURE THE INPUTS AND OUTPUTS AS FOLLOWS:
PIN No | CONFIGURATION
1 | HIGH IMPEDANCE INPUT
2 | HIGH IMPEDANCE INPUT
10 | LOW IMPEDANCE OUTPUT
11 | LOW IMPEDANCE OUTPUT
1001
705
SET VOLTAGES FOR OUTPUTS AS FOLLOWS:
PIN No | CONDITION
10 | CLEAR TO 0 VOLTS
11 | SET TO +4 VOLTS
1002
DELAYS TO ALLOW VOLTAGES IN FABRIC SENSOR TO SETTLE
1003
PERFORM ANALOGUE TO DIGITAL CONVERSION MEASURING THE VOLTAGE AT PIN 17 & STORE RESULT AS X POSITION VARIABLE
1004
CONFIGURE THE INPUTS AND OUTPUTS AS FOLLOWS:
PIN No | CONFIGURATION
10 | HIGH IMPEDANCE INPUT
11 | HIGH IMPEDANCE INPUT
12 | LOW IMPEDANCE OUTPUT
13 | LOW IMPEDANCE OUTPUT
1005
SET VOLTAGES FOR OUTPUTS AS FOLLOWS:
PIN No | CONDITION
12 | CLEAR TO 0 VOLTS
13 | SET TO +4 VOLTS
1006
DELAY TO ALLOW VOLTAGES IN FABRIC SENSOR TO SETTLE
1007
PERFORM ANALOGUE TO DIGITAL CONVERSION MEASURING THE VOLTAGE AT PIN 18 & STORE THE RESULT AS Y POSITION VARIABLE
1008
CONFIGURE THE INPUTS AND OUTPUTS AS FOLLOWS:
PIN No | CONDITION
12 | HIGH IMPEDANCE INPUT
13 | HIGH IMPEDANCE INPUT
1009

Figure 10

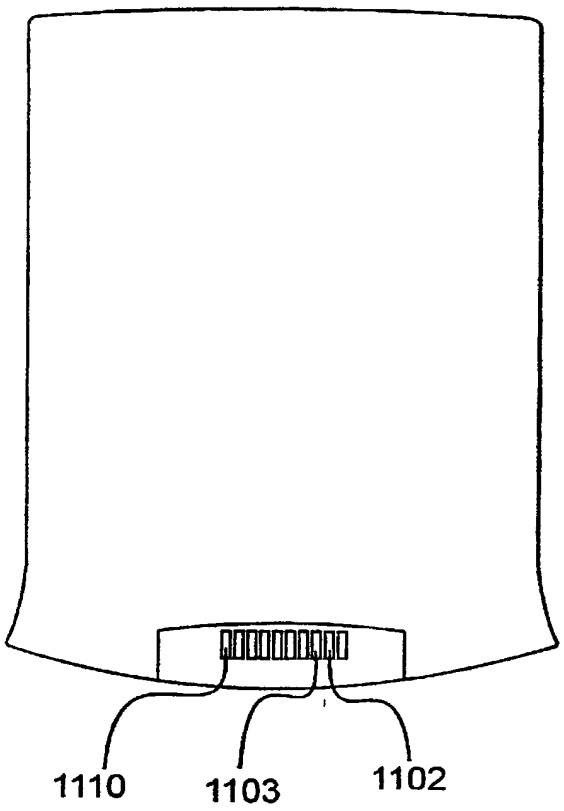

Figure 11

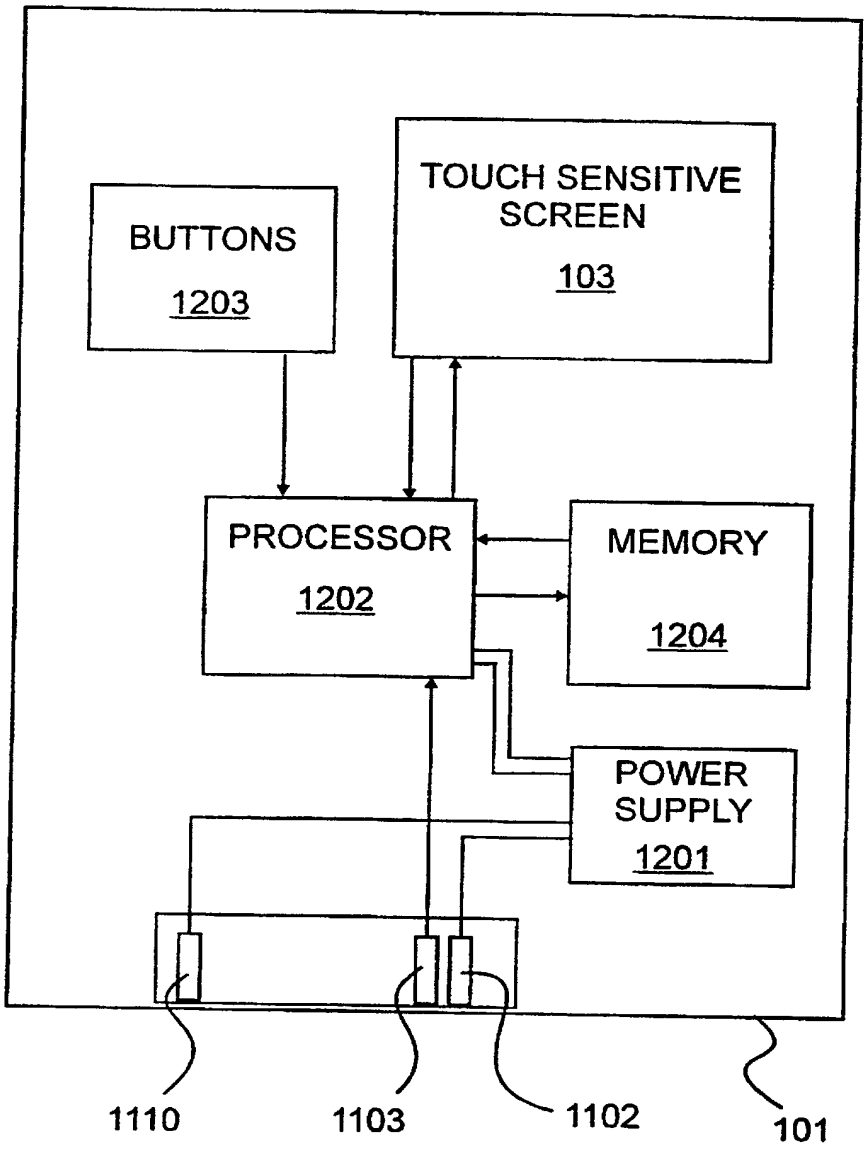
BUTTONS
1203
TOUCH SENSITIVE SCREEN
103
PROCESSOR
1202
MEMORY
1204
POWER SUPPLY
1201
1110
1103
1102
101

Figure 12

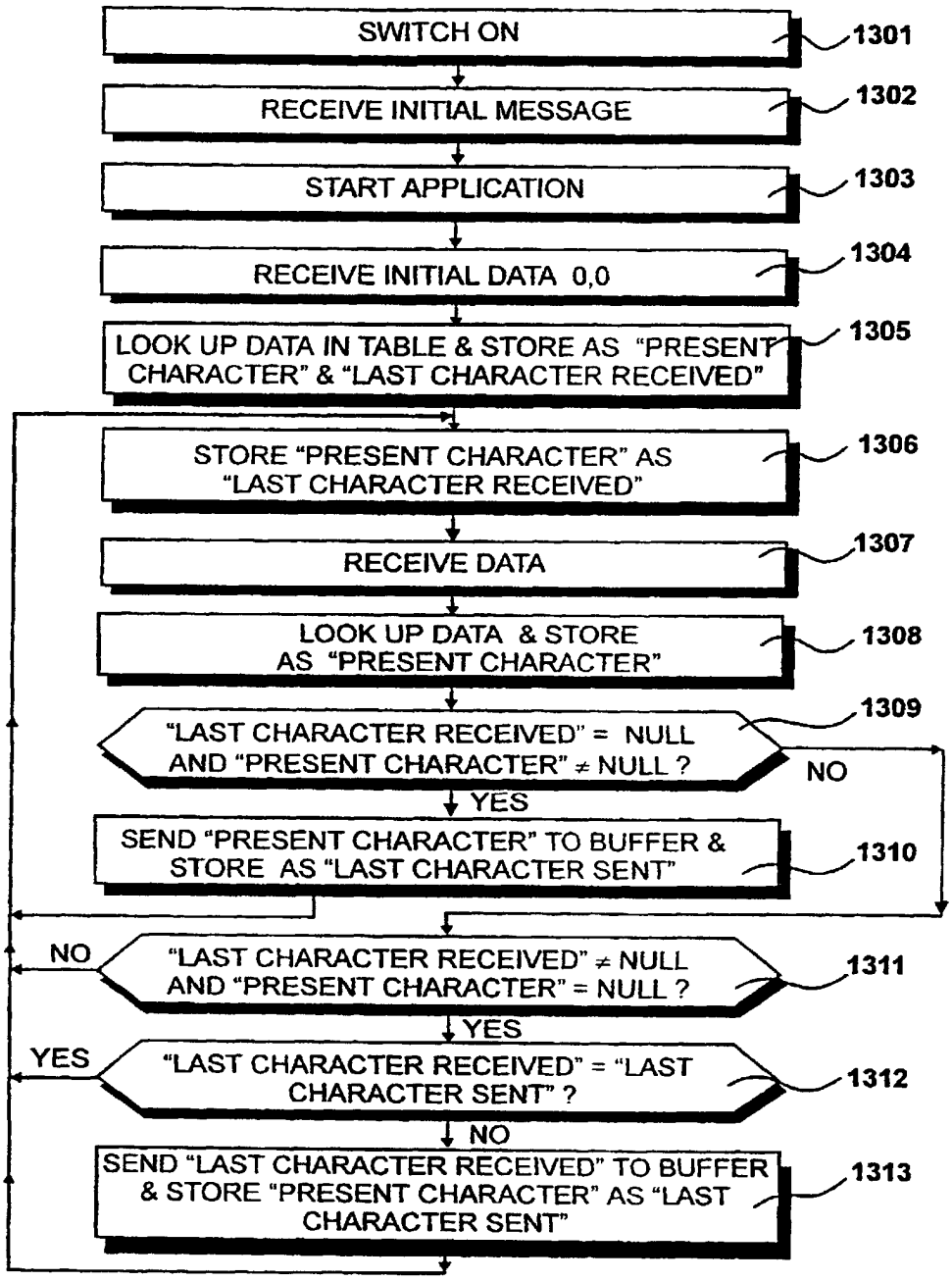
SWITCH ON
1301
RECEIVE INITIAL MESSAGE
1302
START APPLICATION
1303
RECEIVE INITIAL DATA 0,0
1304
LOOK UP DATA IN TABLE & STORE AS "PRESENT CHARACTER" & "LAST CHARACTER RECEIVED"
1305
STORE "PRESENT CHARACTER" AS "LAST CHARACTER RECEIVED"
1306
RECEIVE DATA
1307
LOOK UP DATA & STORE AS "PRESENT CHARACTER"
1308
"LAST CHARACTER RECEIVED" = NULL AND "PRESENT CHARACTER" ≠ NULL ?
1309
NO
YES
SEND "PRESENT CHARACTER" TO BUFFER & STORE AS "LAST CHARACTER SENT"
1310
NO
"LAST CHARACTER RECEIVED" ≠ NULL AND "PRESENT CHARACTER" = NULL ?
1311
YES
YES
"LAST CHARACTER RECEIVED" = "LAST CHARACTER SENT" ?
1312
NO
SEND "LAST CHARACTER RECEIVED" TO BUFFER & STORE "PRESENT CHARACTER" AS "LAST CHARACTER SENT"
1313

Figure 13

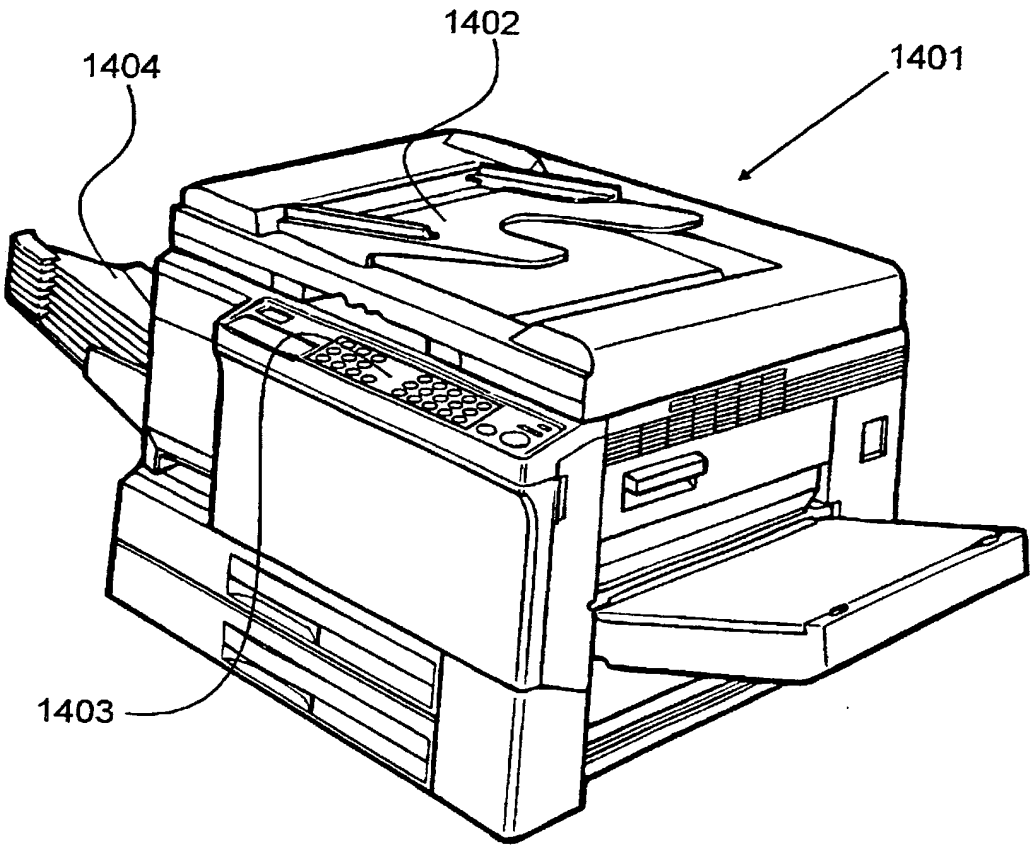

Figure 14

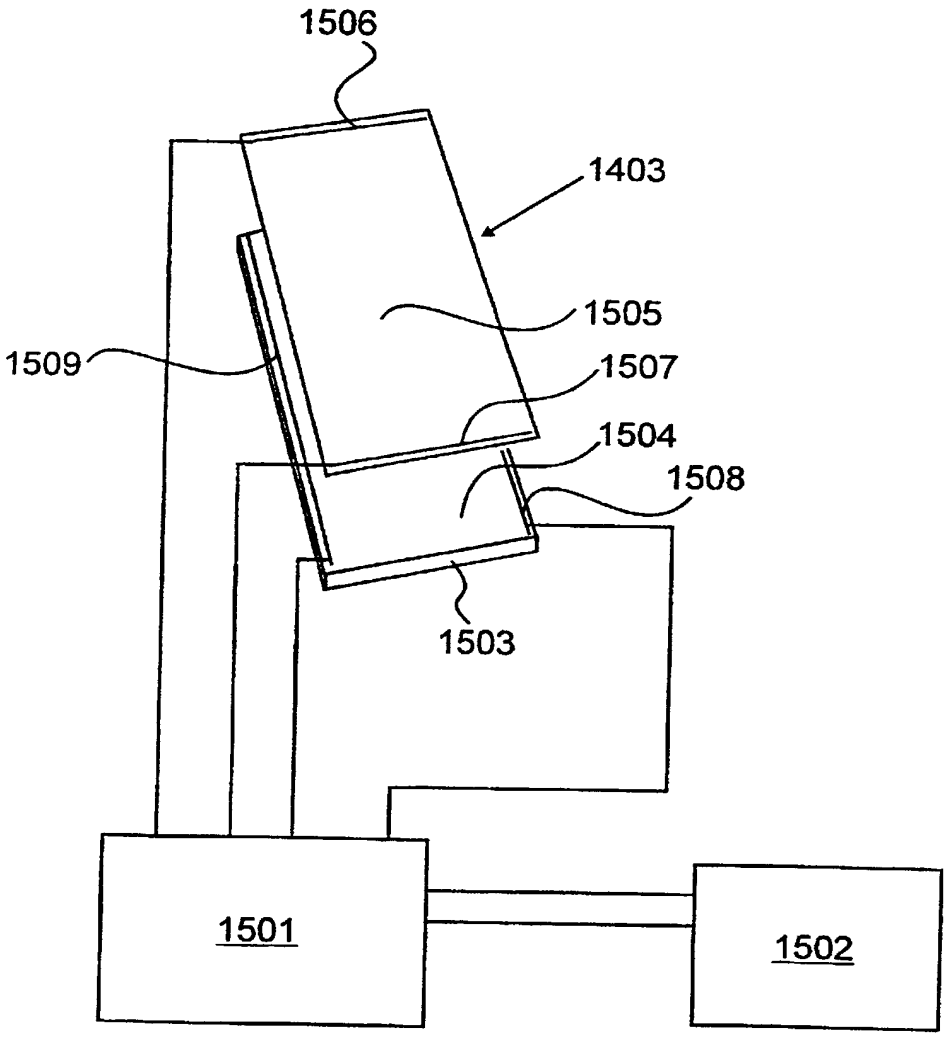

Figure 15